

CLAIMS

1. Internal combustion engine, with direct gasoline injection and controlled injection, comprising at least one cylinder (1), a cylinder head (6) closing the cylinder (1), a piston (7) slidingly arranged in the cylinder (1), a combustion chamber (2) defined between the piston (7) and the cylinder head (6), means (3) for injecting gasoline into the combustion chamber (2), ignition means (4) intended to produce an ignition of the air-gasoline mixture in the combustion chamber (2), intake valves (8) and exhaust valves (9), selectively closing the combustion chamber (2) and means for recirculating at least a portion of the exhaust gases into the combustion chamber (2) during the air intake phase, characterized in that the pressure provided to the injection means (3) is above 250 bars, so as to homogenize the air-gasoline-recirculated exhaust gases mixture and to increase the combustion speed.

2. Engine according to claim 1, characterized in that the exhaust gases reintroduced into the combustion chamber (2) represent a residual ratio above 20%, and preferably comprised between 40 and 60%.

3. Engine according to claim 1 or 2, characterized in that at least a portion of the recirculated exhaust gases is reintroduced into the combustion chamber (2) by a so-called “external” route (EGR), i.e., via a derivation conduit (14, 15).

4. Engine according to claim 1 or 2, characterized in that at least a portion of the recirculated exhaust gases is reintroduced into the combustion chamber (2) via a so-called “internal” route (IGR), i.e., by appropriate control of the intake valves (8) and exhaust valves (9).

5. Engine according to any of claims 1 to 4, characterized in that the gasoline injection means (3) and the ignition means (4) are separated by a distance comprised between 5 and 30 millimeters.

6. Engine according to any of claims 1 to 4, characterized in that the injection means (3) and the ignition means (4) are disposed in the cylinder head according to two respective axes forming an angle (θ) above 35° .

7. Engine according to any of claims 1 to 6, characterized in that the injection means (3) inject gasoline during the compression phase of the engine cycle.

8. Engine according to any of claims 1 to 6, characterized in that the injection means (3) inject gasoline during the intake phase of the engine cycle.